

## **REMARKS**

Entry of the foregoing amendments is respectfully requested.

### **Summary of Amendments**

By the foregoing amendments claims 1, 2 and 4 are amended and new claims 25-33 are added. Accordingly, claims 1-33 are pending in the present application. Claims 1, 5, 9 and 25 are in independent form.

Support for the amendment to claim 1 and the new claims can be found throughout the present specification and the original claims. The amendments to claims 2 and 4 are of merely editorial nature.

New independent claim 25 corresponds to unamended claim 1 except that it recites the presence of copper in an amount from about 0.01 % by weight to about 8 % by weight.

It is pointed out that the amendment to claim 1 is without prejudice or disclaimer to the prosecution of unamended claim 1 in one or more continuation and/or divisional applications.

### **Summary of Office Action**

As an initial matter, Applicant notes with appreciation that a signed and initialed copy of the Form PTO-1449 submitted in the Information Disclosure Statement filed September

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15, 2004 has been returned together with the present Office Action. However, Applicant respectfully requests that in the next communication from the Patent and Trademark Office the Examiner also indicate consideration of the Supplemental Information Disclosure Statement filed September 17, 2004 with which a copy of the International Preliminary Examination Report for International Application PCT/US03/00011 (which is a family member of the present application) was submitted.

Also, concurrently herewith Applicant is submitting a Second Supplemental Information Disclosure Statement and the Examiner is respectfully requested to consider this statement and to return a signed and initialed copy of the Form PTO-1449 submitted therein with the next communication from the Patent and Trademark Office.

Claims 1-24 are rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over claims 1-25 of U.S. Patent No. 6,761,777 to Radon (hereafter "RADON").

Claims 1-5, 9, 13, 15, 23 and 24 are rejected under 35 U.S.C. § 103 as allegedly being unpatentable over U.S. Patent No. 5,194,221 to Culling (hereafter "CULLING").

Claims 1, 3-5, 9, 10, 13, 15, 23 and 24 are rejected under 35 U.S.C. § 103 as allegedly being unpatentable over U.S. Patent No. 4,793,875 to Larson (hereafter "LARSON").

Claims 1-5, 9, 13, 15, 23 and 24 are rejected under 35 U.S.C. § 103 as allegedly being unpatentable over U.S. Patent No. 4,487,630 to Crook et al. (hereafter "CROOK").

**Response to Office Action**

Reconsideration and withdrawal of the rejections of record are respectfully requested in view of the foregoing amendments and the following remarks.

***Response to Rejection under Doctrine of Obviousness-Type Double Patenting***

Claims 1-24 are rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over claims 1-25 of RADON. The rejection acknowledges that the conflicting claims are not identical but asserts that they are not patentably distinct from each other because the claimed alloy compositions are overlapped by the alloy compositions of the cited U.S. patent.

Submitted herewith is a Terminal Disclaimer pursuant to 37 C.F.R. 1.321(c) with respect to RADON. Accordingly, the rejection of claims 1-24 over RADON is rendered moot. It is pointed out that the submission of the Terminal Disclaimer is not to be construed as Applicant's admission that the Examiner's assessment of patentability of claims 1-24 in view of RADON is correct, but merely is to expedite the issuance of a patent on the present claims.

***Response to Rejection under 35 U.S.C. § 103 over CULLING***

Claims 1-5, 9, 13, 15, 23 and 24 are rejected under 35 U.S.C. § 103 as allegedly being unpatentable over CULLING. The rejection essentially asserts that this document discloses the steel composition, the austenitic (cubic face centered) structure and the N solubility

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recited in the rejected claims. In this regard, the rejection relies on case law according to which a *prima facie* case of obviousness typically exists when the ranges of a claimed composition overlap the corresponding ranges disclosed in the prior art. Regarding the PREN value range recited in claim 13, the Examiner appears to take the position that due to the alleged overlap in composition, the PREN value of the steels of CULLING must have a PREN value in the claimed range as well.

This rejection is respectfully traversed. In particular, it is noted that all of present independent claims 1, 5 and 9 recite a concentration of manganese which is well above the maximum concentration taught by CULLING, i.e., 4 % by weight. For example, in col. 4, lines 26-37, CULLING states:

Alloys of the present invention contain a maximum of about 4% manganese. At higher manganese contents castings from the instant high carbon alloys are susceptible to severe deterioration of their surface when melted in ordinary furnace linings and cast in ordinary mold materials. A major cause of this problem is that the formation of manganese oxides becomes excessive above about 4% manganese in the instant alloys. Since manganese oxides are basic materials they chemically react with the acidic furnace and mold materials and produce gas holes and slags in the surface of the castings.

Emphasis added. Accordingly, by emphasizing the importance of a maximum concentration of manganese of about 4 %, CULLING not only fails to render obvious the subject matter of present claims 1-24, but even teaches away therefrom.

It also is noted that CULLING fails to render obvious claims 1-24 for other reasons as well. For example, while CULLING mentions a maximum concentration of chromium of 35 %, this document at the same time makes it clear that such a high concentration of

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chromium is not preferred, and is acceptable only in combination with certain concentrations of various other elements, and that generally 30 % or less, i.e., about 25 % to about 29 % of chromium should be present. See, for example, col. 4, lines 10-25 of CULLING.

Accordingly, the present amendment to claim 1 should by no means be construed as Applicant's admission that unamended claim 1 would not have been patentable over CULLING. Rather, the amendment to claim 1 merely is to expedite the issuance of a patent on the present application, and Applicant expressly reserves the right to prosecute unamended claim 1 in one or more continuation and/or divisional applications.

With respect to new independent claim 25, Applicant notes that this claim recites the presence of copper in concentrations of from about 0.01 % to about 8 % by weight. Dependent claim 27 even recites a concentration of at least about 0.7 % of copper. In contrast, CULLING does not even mention copper, let alone recommend the presence thereof in a concentration of about 0.01 % by weight or higher. Accordingly, CULLING does not render obvious the subject matter of claim 25 (and of the claims dependent therefrom), either.

It is respectfully submitted that for at least the foregoing reasons the Examiner has failed to establish a *prima facie* case of obviousness in view of CULLING with respect to any of the claims submitted herewith. Accordingly, withdrawal of the rejection of the present claims under 35 U.S.C. § 103(a) is warranted and respectfully requested.

***Response to Rejection under 35 U.S.C. § 103 over LARSON***

Claims 1, 3-5, 9, 10, 13, 15, 23 and 24 are rejected under 35 U.S.C. § 103 as allegedly being unpatentable over LARSON. The rejection essentially asserts that this document discloses the steel composition, the N solubility and the carbides and nitrides recited in the rejected claims. Based on this assertion, the rejected claims are alleged to be *prima facie* obvious over LARSON for the same reason as in the case of CULLING.

This rejection is respectfully traversed as well. In this regard, Applicant emphasizes that LARSON requires an approximately 50/50 mixture of austenite and ferrite (see, e.g., abstract), i.e., not an austenitic matrix as recited in the present independent claims. Additionally, based on the calculations carried out by Applicant it appears that in the case of the broad concentration ranges recited in the table in column 2 of LARSON (and specifically relied on in the present rejection) the fraction defined at the end of each of the present independent claims would only have a maximum value of 1.4, i.e., significantly lower than the value of 1.5 or higher recited in the present independent claims.

Further, in the case of the preferred concentration ranges in the last table of column 4 of LARSON (see also claim 3 thereof), the maximum value of the fraction would appear to be only about 1.04, and in the case of the (only) specific composition set forth at the top of col. 5, the fraction would have a value of only about 0.75. This clearly teaches away from the invention set forth in the present claims.

For at least the reasons set forth above, LARSON fails to render obvious the subject

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matter of any of the present claims, wherefore withdrawal of the rejection of claims 1, 3-5, 9, 10, 13, 15, 23 and 24 under 35 U.S.C. § 103 over LARSON is warranted, which action is respectfully requested.

***Response to Rejection under 35 U.S.C. § 103 over CROOK***

Claims 1-5, 9, 13, 15, 23 and 24 are rejected under 35 U.S.C. § 103 as allegedly being unpatentable over CROOK. The rejection essentially asserts that this document discloses the steel composition, the chromium carbides and nitrides and the valve part recited in the rejected claims. Based on this assertion, the rejected claims are alleged to be *prima facie* obvious over CROOK for the same reason as in the case of CULLING.

This rejection is respectfully traversed as well. Applicant notes that CROOK specifically emphasizes the importance of a high cobalt concentration in the alloys disclosed therein. Specifically, according to col. 3, lines 60-65 of CROOK, cobalt “is especially critical in the composition of the alloy” and the content thereof “must be at least 5 % to provide an effective increased impact strength”. According to, e.g., the table at the top of columns 3 and 4 of CROOK, a “more preferred” range of cobalt content is 9-15 %, with a “typical range” of 11-13 %.

Accordingly, while CROOK calls for a minimum cobalt concentration of at least 5 %, and recommends cobalt concentrations of at least 9 %, all of the present independent claims recite a cobalt concentration of about 4 % or lower, i.e., significantly below the minimum

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called for by CROOK, and far below the more preferred and typical ranges for cobalt recommended in CROOK. Thus, also CROOK teaches away from the alloys of the present invention.

For at least the reasons set forth above, the Examiner has failed to establish a *prima facie* case of obviousness of the subject matter of any of the rejected claims in view of CROOK, wherefore the rejection of claims 1-5, 9, 13, 15, 23 and 24 under 35 U.S.C. § 103 over CROOK is without merit and withdrawal of the rejection is warranted and respectfully requested.

### **CONCLUSION**

In view of the foregoing, it is believed that all of the claims in this application are in condition for allowance, which action is respectfully requested. If any issues yet remain which can be resolved by a telephone conference, the Examiner is respectfully invited to telephone the undersigned at the telephone number below.

Respectfully submitted,  
Roman RADON



Stephen M. Roylance  
Reg. No. 31,296

April 5, 2005  
GREENBLUM & BERNSTEIN, P.L.C.  
1950 Roland Clarke Place  
Reston, VA 20191  
(703) 716-1191